

REMARKS

Claims 1-11, 13, and 25-30 are pending, with Claims 1, 13, 28, and 30 being independent. Claims 1-11, 13, 26-28 and 30 have been amended. Applicants submit that support for the amendments can be found in the original disclosure at least, for example, at page 7, lines 1-13. Therefore, no new matter has been added.

Applicants request that the Examiner initial and return a copy of the PTO-1449 form indicating his consideration of the information cited in the Information Disclosure Statement filed November 10, 2004.

The specification was objected to for failing to provide antecedent basis for the claim phrase “in the air.” Applicants traverse this rejection because the purpose for requiring antecedent basis for claim terms in the specification is so that the meaning of claim terms is clear (see M.P.E.P. §608.01(o)), and Applicants submit that one skilled in the art would clearly understand the meaning of “in the air.” Nevertheless, the specification has been amended to include that phrase “in the air.” Applicant submits that support for this amendment can be found, for example, at least in Figure 1 of the drawings, and therefore no new matter has been added.

The specification was also objected to as allegedly failing to provide antecedent basis for the term “controller.” Applicants respectfully traverse this objection and submit that the specification discloses an image control device 1304 for controlling an image display panel 1303 at least at page 18, line 22 of the specification.

The specification has been amended at page 14, line 13 as suggested by the Examiner, to address the objection to the term “shot together.”

Favorable reconsideration and withdrawal of the objections to the specification are requested.

Claim 1 has been amended in accordance with the Examiner’s suggestion to address the objection to Claim 1. Favorable consideration is requested.

The drawings have been objected to as allegedly failing to discloses the claimed controller for controlling said display panel. Applicants respectfully traverse this objection and submit that the claimed controller is shown at least in Fig. 13, which shows

image control device 1304 that controls image display panel 1303. Favorable reconsideration and withdrawal of this objection are requested.

Claims 1-2, 5-6, 9-10, 13, and 26-28 stand rejected under 35.U.S.C. §102(a) as being anticipated by U.S. Patent No. 6,023,277 (Osaka, et al.). Claims 3-4, 11, and 29-30 stand rejected under 35.U.S.C. §103(a) as being obvious over Osaka, et al. and Claims 7-8 stand rejected under Section 103(a) as being obvious over Osaka, et al. in view of U.S. Patent No. 6,549,650 (Ishikawa, et al.). Applicants respectfully traverse these rejections for the reasons discussed below.

As recited in independent Claim 1, the present invention includes, *inter alia*, the feature of generating 3D image data for a 3D display apparatus that emits a plurality of rays to form intersections of the plurality of rays in air, wherein the plurality of rays from the intersections enter into an eye of an observer to be viewed as light flux, such that the observer recognizes the intersections as point images, a large collection of which forms a 3D image.

The principles underlying the invention of Claim 1 are described in the specification, for example, at least with respect to Figs. 1 and 18 of the drawings. For the Examiner's convenience and better understanding, an explanation of these principles is provided below with respect to the attached Figs. A-F.

As shown in attached Fig. A, a point light source radiates rays in all directions. Fig. B shows that some rays (shown as solid lines) from the point light source enter an observer's eye and other rays (shown as dotted lines) do not. Fig. C shows a simplified view illustrating the rays from the point light source that enter the observer's eye. These rays are viewed by the observer as light flux, and from the observer's viewpoint the point light source behaves as a light image.

As shown in Fig. F, when an object is illuminated by light from a light source, the reflected light rays are viewed by an observer and the observer can recognize the shape of the object. The present invention recited in Claim 1 simulates this process. In particular, the invention of Claim 1 enables artificial creation of point light sources as discussed above with respect to Figs. A-C, by emitting rays that form intersections in the air. As shown in attached Fig. D, a 3D display apparatus emits a plurality of rays the form

intersections, and the rays from the intersections enter the eye of an observer to be viewed as light flux, such that the intersections are recognized as point images. As shown by Fig. E, the plurality of rays can be emitted to form a plurality of intersections arranged in a rectangular shape, and thus a large collection of point images form a 3D image for the observer. Accordingly, an observer can recognize a shape of an object from a plurality of intersections formed by emitted rays in the same way as if the rays were generated by light reflected from a light source as in Fig. F.

Applicants submit that the cited art fails to disclose or suggest at least the above-mentioned features recited in Claim 1. For example, Osaka uses a crossed-lenticular lens scheme, in which left and right parallax images are observed upon being separated by lenticular lenses for viewing by both eyes of a user so that the user recognizes 3D object images. The Examiner points out that Fig. 22B of Osaka shows intersections of a plurality of rays. However, those intersections do not enter into an eye of an observer to be viewed as light flux, such that the observer recognizes the intersections as point images, and there is no large collection of intersections to form a 3D object image. Instead, as shown in Figs. 22A and 22B of Osaka, irradiated rays from backlight 3 are directed at an observer's right eye (ER) and left eye (EL), respectively. In Osaka therefore, the intersections are merely intersections of rays crossing and do not constitute a collection of intersections recognized by an observer as point images which form a 3D image. The other cited art also fails to disclose or suggest at least the above-mentioned features of Claim 1.

For the foregoing reasons, Applicants submit that the present invention recited in Claim 1 is patentable over the art of record. Independent Claims 13, 28, and 30 recite similar features and are believed patentable for similar reasons. The dependent claims are believed patentable for at least the same reasons as the independent claims, as well as for the additional features they recite.

Request for Interview

Applicants believe a personal interview may be helpful to advance prosecution of this application. Accordingly, when the Examiner receives this Amendment he is requested to contact Applicants' undersigned representative to schedule an interview.

In view of the foregoing, Applicants submit that this application is in condition for allowance. Favorable reconsideration, withdrawal of the above-mentioned objections and rejections, and an early Notice of Allowance are requested.

Applicants' undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should be directed to our below-listed address.

Respectfully submitted,



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